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Re transmission of Appeal Brief

Application Number	10/035,985
Filing Date	12/31/2001
First Inventor	Wang, Xingwu
Examiner Name	Dah-Wei D. Yuan
Art Unit	1745
Docket Number	XW-33 (393)

DATE OF DEPOSIT: 5/6/2004

TITLE OF CASE:

Implantable Fuel Cell

The following documents are enclosed:

Certificate of Mailing (1 page)

Appeal Brief (in triplicate, 152 pages per copy, 456 pages total)
Return Postcard

This appeal brief is a re-transmission of the brief filed on March 1, 2004, for which a Notice of Non-Compliance was received.

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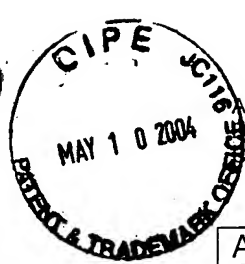
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___ Howard J. Greenwald, Reg. No. 24,247
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☒ Peter J. Mikesell, Reg. No. 54,311



Application No.: 10/035,985
Date of Appeal Brief: 05/06/2004
Concerning the Office Action of: 02/12/2004

Application No.	10/035,985
Applicant	Wang, Xingwu
Filed	12/31/2001
Title	Implantable Fuel Cell
TC/A.U.	1745
Examiner	Dah-Wei D. Yuan
Docket No.	XW-33 (393)

Honorable Commissioner for Patents
P.O. Box 1450
5 Alexandria, VA 22313-1450

APPEAL BRIEF

Sir:

10 This is an Appeal to the Examiner's Final Office Action of February 12, 2004 finally rejecting claims 1-18. Claims 1-3 and 6-18 are being appealed.

APPEAL BRIEF: (10 pages)

15 EXHIBIT A: Office Action of August 27, 2003 (5 pages)

EXHIBIT B: Response of Appellants of January 27, 2004 (14 pages)

20 EXHIBIT C: Final Office Action of February 12, 2004 (6 pages)

EXHIBIT D: Notice of Appeal of February 18, 2004 (5 pages)

EXHIBIT E: Response of Appellants of May 6, 2004 (8 pages)

25 EXHIBIT F: United States Patent 4,294,891 (11 pages)
United States Patent 5,952,118 (15 pages)
United States Patent 6,010,798 (5 pages)
United States Patent 6,020,083 (7 pages)
United States Patent 6,063,516 (12 pages)
30 United States Patent 6,110,611 (5 pages)
United States Patent 6,190,791 (7 pages)
United States Patent 6,277,513 (22 pages)
United States Patent 6,294,281 (10 pages)
35 United States Patent 6,309,773 (10 pages)

1. REAL PARTY IN INTEREST

This utility patent application was filed in the names of Xingwu Wang, Chaonan Chen, and Huihui Duan. The application was subsequently assigned to Nanoset LLC. Biophan Technologies Incorporated and Nanoset LLC have a licensing arrangement that concerns this application.

2. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences related to the instant application.

3. STATUS OF CLAIMS

Claims 1-18 have been rejected. Claims 4 and 5 have been canceled in an amendment filed on May 6, 2004. No claims have been allowed. Claims 1-3, and 6-18 are the subject of this appeal.

4. STATUS OF AMENDMENTS

An amendment after Final Rejection has been filed on May 6, 2004 in compliance with M.P.E.P. 1207. This amendment cancels claims 4 and 5 in an effort to remove issues from appeal, thereby simplifying the appeal process. As of the mailing of this brief, this amendment has not been acted upon by the Examiner.

5. SUMMARY OF INVENTION

The first embodiment of the instant fuel cell is depicted in Figure 1 and in the corresponding description found in the specification. In the following summary, at least one location in the specification is cited to correspond to each limitation found in claim 1. It should be clear that the applicant is merely summarizing one embodiment of the instant invention, and such a summary is not intended to be limiting.

Means for converting fat to glycerol and fatty acid is disclosed on page 7 beginning at line 20. In the embodiment depicted in Figure 1, this corresponds to element 46.

Means for converting glycerol to hydrogen is disclosed on page 11 beginning at line 5. In Figure 1, this corresponds to chamber 58.

Means for converting fatty acid to hydrogen is disclosed on page 9, beginning at line 10. In Figure 1, this corresponds to chamber 58.

Means for converting a bodily fluid to a gas selected from the group consisting of hydrogen, oxygen, and mixtures thereof is disclosed on page 13 at line 15, page 14 at line 3, and page 16 at line 7. In Figure 1, this corresponds to element 92.

Fuel cell means for producing electricity from hydrogen and oxygen is disclosed on page 11 beginning at line 5. In Figure 1, this corresponds, at least in part, to the fuel cell represented by anode 76, cathode 94.

6. ISSUES

Issue 1 - Whether the rejection of claims 1-3 and 6-18 under 35 U.S.C. 112, first paragraph, as allegedly not enabled, was proper.

5 7. GROUPING OF CLAIMS

For the purposes of this appeal only, the applicant accepts without prejudice the presumption that the claims stand or fall together in view of all claims being appealed depending from independent claim 1.

10 8a. ARGUMENT

Issue 1 - Whether the rejection of claims 1-3 and 6-18 under 35 U.S.C. 112, first paragraph, as allegedly not enabled, was proper.

Overview

15 The Examiner has finally rejected claims 1-18 alleging they are not enabled by the specification as filed. In doing so, the Examiner has pointed to limitations contained only in claims 4 and 5, and asserted those limitations are not enabled. Appellants' respectfully submit that if, for the sake of argument, one assumes that these limitations are not enabled, this does not speak to the
20 enablement of the claims which do not contain the subject limitations.

Prosecution History

Applicants responded to the non-final Office Action of August 27, 2003, wherein the examiner asserted the term "microknife", found only in dependent
25 claim 5, was not enabled by the specification as filed. As a result of this alleged non-enablement, the Examiner rejected all claims in the application. In a response by the appellants dated January 27, 2004, appellants made the following assertion:

30 The applicants respectfully suggest the rejection of claims 1-4 and 6-18 is improper, as these terms do not contain the claim element the Examiner has objected to. The applicants note that the Examiner has objected to the claim element of a "microknife". The applicants respectfully suggest that this element appears only in claim 5. Claim 5 has no dependent claims. The applicants respectfully suggest that a
35 rejection of claims 1-4 and 6-18 is improper, as these claims do not contain the claim element which the Examiner is rejecting.

After considering the appellants' response, the Examiner issued a Final Office Action. In this Office Action, the Examiner maintained the rejection concerning the term "microknife" in claim 5, and expanded the commentary to
40 include the term "harvesting" found in claim 4 (from which claim 5 is dependent). The Final Office Action was silent with respect to the above arguments by the appellants. The Office Action read, in part:

Claims 1-18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The disclosure does not discuss clearly how the fat cells are harvested before they can be processed to glycerol and fatty acid. The term "harvesting" is interpreted to include not only cutting, but also collecting the cut cells and transporting the cells to the reaction sites for converting fatty acid to hydrogen. The term "microknife" has been used in conjunction with different medical fields. Ashraf (US 6,197,039 b1) describes the use of a microknife for hair transplant. Michelson (US 5,423,842) discloses the use of a microknife in spinal surgery. It is not clear as to the functionality and structure of the microknife recited in the instant specification. Applicant discloses that the microknife is used to harvest the fat cell beneath a person's skin before the cells can be converted to fatty acid and glycerol. It is therefore of imperative significance to understand how the microknife is operated and functioned. It is the position of the examiner that the disclosure fails to teach people of ordinary skill in the art as how the body fat is harvested and collected from the human body before it is converted to reactant gas for the fuel cell.

The Examiner also offered the following as guidance:

- (a) Surgical device may be readily comprehensible for one of ordinary skill in the medical device art, but not necessarily for the artisan in the fuel cell art;
- (b) both Carr reference teach a device for simultaneously performing precision cutting and cauterizing of targeted tissues. However, the instant disclosure requires additional functionality and undertaking, other than cutting and cauterizing, from the converting means to enable one skilled in the art to make and/or use the invention. Specifically, it is unclear to the examiner how the fat cells are to be collected, transported and handled before the reaction with the enzyme can take place. The instant specification also fails to disclose how the gaseous species, including hydrogen and oxygen, would be contained for a conventional fuel cell reaction.

Appellants respectfully submit that the rejection of claims 1-3 and 6-18 is still improper, as these claims do not contain the allegedly non-enabled limitations cited by the Examiner. Reconsideration of claims 1-3 and 6-18 is respectfully requested.

Arguments

The enablement requirement of 35 U.S.C. 112, first paragraph requires that the appellants must enable only what is claimed:

In view of the foregoing, we conclude that *the scope of enablement of appellant's specification is commensurate with the scope of his claim* for purposes of the first paragraph of 35 U.S.C. 112. *In re Geerdes*, 491 F.2d 1260, 180 USPQ 789 (CCPA 1974) citing *In re Cook* 439 F.2d 730, 169 USPQ 298 (CCPA 1971) (emphasis in original)

Applicants note that claim 1, for example, contains five limitations. The Examiner has not alleged that any of these five limitations is not enabled, yet has

rejected claim 1 as allegedly non-enabling anyway. Likewise, a multitude of other claims were likewise improperly rejected.

The Examiner has objected to the phrases "harvesting" and "microknife", asserting these limitations are not enabled by the specification as filed.

5 Applicants note that these limitations are only present in dependent claims 4 and 5. While the applicants do not necessarily agree that claims 4 and 5 are not enabled, to facilitate this appeal, applicants have chosen to not appeal claims 4 and 5.

10 Applicants respectfully submit that it is improper to reject claims 1-3, and 6-18 on the enablement grounds cited by the Examiner, as these claims simply do not contain the limitations in question. This argument has been previously presented to the Examiner in the amendment filed on January 27, 2004, on page 5, beginning at line 38. Applicants' respectfully reiterate this argument. The invention that must be enabled is the claimed invention, and not aspects of the
15 invention for which patent protection is not being pursued.

Clearly, the "harvesting" and "microknife" terms are not present in the subject claims. Appellants respectfully submit they are under no obligation to enable limitations that are not being claimed. With respect to the Examiner's assertion that "...the instant disclosure requires additional functionality..." it is
20 respectfully submitted that the instant *disclosure* is not at issue, rather the instant *claims* are. The instant claims do not require this "additional functionality". The appellants likewise assert that the disclosure *requires* this functionality. See, for example, page 6 beginning at line 8, wherein the application states that "any conventional means" may be used.

25 With respect to the Examiner's comment that "Specifically, it is unclear to the examiner how the fat cells are to be collected, transported and handled before the reaction with the enzyme can take place." The specification clearly teaches that fat cells may be harvested by "any conventional means". In one embodiment of the invention, this mode of delivery may be as simple as
30 manually injecting fat into the receiving chamber. Such a disclosure is taught in United States Patent 4,294,891 which was incorporated by reference into the appellants' specification on page 11 at line 5. The simple teaching of this one embodiment alone is sufficient to meet the enablement requirement.

35 To satisfy the enablement requirement of 35 USC 112, first paragraph, the appellants need not describe all embodiments. The enablement of a single embodiment is enough to satisfy the enablement requirement:

M.P.E.P. §21640.2 But because only an enabling disclosure is required, applicant need not describe all actual embodiments.

40 M.P.E.P. §21640.1(b) As long as the specification discloses at least one method for making the using the claimed invention that bears a reasonable correlation to the entire scope of the claim, then the enablement requirement of 35 U.S.C 112 is satisfied. *In re Fisher*, 427 F.2d 833, 839, 499 USPQ 18, 24 (CCPA 1970).

45 M.P.E.P. §2164.02 A single working example in the specification for a claimed invention is enough to preclude a rejection which states that nothing is enabled since at least that embodiment would be enabled.

Moreover, the simple act of placing fat cells within the device is clearly a predictable factor. The M.P.E.P. teaches that broad enablement can be provided when the factors under consideration are highly predictable.

M.P.E.P. §2164.03 A single embodiment may provide broad enablement in cases involving predictable factors, such as mechanical or electrical elements. *In re Vickers*, 141 F.2d 522, 526-27, 61 USPQ 122, 127 (CCPA 1944); *In re Cook*, 439 (F.2d 730, 734, 169 USPQ 298, 301 (CCPA 1971).

With respect to the Examiner's comment that "The instant specification also fails to disclose how the gaseous species, including hydrogen and oxygen, would be contained for a conventional fuel cell reaction" the specification clearly teaches hydrogen permeable members on page 12 at line 11. Oxygen permeable members are taught on page 13 at line 15. Moreover, this particular issue is fundamental to Proton Exchange Membrane (PEM) fuel cells in general. It is unclear exactly what the Examiner is objecting to. PEM Fuel cells are well known in the art. In compliance with the M.P.E.P., the topics that were well known in the art were not recited at length in the specification.

M.P.E.P. §2164.01 A patent need not teach, and preferably omits, what is well known in the art. *In re Buchner*, 929 F.2d 660, 661, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991); *Hybritech, Inc. v Monoclonal Antibodies, Inc.* 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986), cert. denied 480 U.S. 947 (1987); and *Linde-mann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1463, 221 USPQ 481, 489 (Fed. Cir. 1984).

While not discussed at great length, PEM fuel cells were specifically disclosed on page 12 of the specification, beginning at line 16. A plurality of patents that teach PEM fuel cells, and thus teach "how the gaseous species, including hydrogen and oxygen, would be contained for a convention fuel cell reaction" were incorporated by reference in the last paragraph of page 12. These include United States Patents 6,309,773; 6,277,513; 6,190,791; 6,110,611; 6,063,516; 6,020,083; 6,010,798; and 5,952,118. Incorporation of any one of these alone is sufficient to satisfy the enablement requirement. Further reference may be had to United States Patents 4,294,891 and 6,294,281. United States Patent 4,294,891 was incorporated by reference on page 11, line 5 of the specification as filed. Likewise, on page 12, line 2, United States Patent 6,294,281 was incorporated by reference.

Appellants note that is it permissible to rely upon incorporated documents to provide an enabling disclosure:

M.P.E.P. §608.01(p)(I)(A) An application for a patent when filed may incorporate 'essential material' by reference to (1) a U.S. patent, (2) a U.S. patent application publication, or (3) a pending U.S. application... 'essential material' is defined as that which is necessary to (1) describe the claimed invention, (2) provide an enabling disclosure of the claimed invention, or (3) describe the best mode (35 U.S.C. 112).

With respect to matters necessary for an enabling disclosure and which are not common or well known, an applicant may, in the interests of economy of time and space, incorporate certain types of documents by specific reference in his application to such source materials. After ruling that prior U.S. patents may

be so incorporated,...this court extended the doctrine of incorporation by reference stating as a general guideline...that any reference to a disclosure which is available to the public is permissible." *In re Howarth*, 210 USPQ at 692

Appellants note that the burden is on the Examiner under the enablement requirement:

M.P.E.P. §2164.04 In order to make a rejection, the examiner has the initial burden to establish a reasonable basis to question the enablement provided for the claimed invention. *In re Wright*, 999 F.2d 1557, 1562, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993)...Specific technical reasons are always required."

Should the Examiner make a *prima facie* case of non-enablement then the burden would shift to the appellants to present persuasive arguments to the contrary. The appellants respectfully submit they are not under an obligation to rebut such a case, as there is clearly no *prima facie* case to rebut.

8b. CONCLUSION

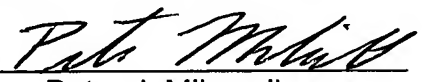
Appellants respectfully submit that the Examiner has rejected the subject claims as not enabled, but has not even superficially alleged that any of the elements in the appealed claims are not enabled. This is clearly an improper enablement rejection.

Appellants note that this subject enablement rejection is the only outstanding rejection for the application. There are no prior art rejections.

For the extensive reasons advanced above, appellants respectfully contend that each claim is patentable. Therefore, reversal of the rejections of claims 1-3 and 6-18 is courteously requested.

To the extend necessary, please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 50-2753 and credit any excess fees to such deposit account. If necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made.

Respectfully submitted,
Howard J. Greenwald P.C.

By 
Peter J. Mikesell
Reg. No. 54,311
Telephone (585) 387-0285
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9. APPENDIX

1. (Original) An implantable fuel cell assembly comprised of means for converting fat to glycerol and fatty acid, means for converting glycerol to hydrogen, means
5 for converting fatty acid to hydrogen, means for converting a bodily fluid to a gas selected from the group consisting of hydrogen, oxygen, and mixtures thereof, and fuel cell means for producing electricity from hydrogen and oxygen.
2. (Original) The implantable fuel cell assembly as recited in claim 1, wherein
10 said implantable fuel cell assembly is disposed beneath the skin of a human being.
3. (Original) The implantable fuel cell assembly as recited in claim 2, wherein said implantable fuel cell assembly is disposed near fat cells.
4. (Canceled) ~~The implantable fuel cell assembly as recited in claim 1, wherein~~
15 ~~said implantable fuel cell assembly is comprised of means for harvesting fat cells.~~
5. (Canceled) ~~The implantable fuel cell assembly as recited in claim 4, wherein~~
~~said means for harvesting fat cells is comprised of a microknife.~~
6. (Original) The implantable fuel cell assembly as recited in claim 1, wherein
20 said means for converting said fat to said glycerol and said fatty acids is comprised of a fat-permeable material.
7. (Original) The implantable fuel cell assembly as recited in claim 6, wherein said means for converting said fat to said glycerol and said fatty acids is comprised of lipase enzyme.

8. (Original) The implantable fuel cell assembly as recited in claim 7, wherein
from about 3 to about 10 percent of said lipase enzyme is present, based upon
the total mass of said lipase enzyme and said fat.

9. (Original) The implantable fuel cell assembly as recited in claim 8, further
5 comprising a porous material with an average pore size of less than about 10
nanometers.

10. (Original) The implantable fuel cell assembly as recited in claim 1, wherein
said means for converting said fatty acids to hydrogen is comprised of beta
oxidase enzyme.

10 11. (Original) The implantable fuel cell assembly as recited in claim 10, wherein
said means for converting said fatty acids to hydrogen is comprised of
oxaloacetate.

12 (Original) The implantable fuel cell assembly as recited in claim 1, further
comprising a glycerol fuel cell.

15 13. (Original) The implantable fuel cell assembly as recited in claim 12, wherein
said glycerol fuel cell is comprised of an anode and anode enzyme disposed on
said anode, wherein said anode is configured and arranged for electroxidizing
an anode reductant in the presence of the anode enzyme.

14. (Amended) The implantable fuel cell assembly as recited in claim 13, wherein
20 said glycerol fuel cell is comprised of a cathode spaced apart from said anode
and cathode enzyme disposed on said cathode, wherein said cathode is
configured and arranged for electroreducing a cathode oxidant in the presence
of said cathode enzyme.

15. (Original) The implantable fuel cell assembly as recited in claim 1, wherein
said gas is oxygen.

16. (Original) The implantable fuel cell assembly as recited in claim 1, wherein
said fuel cell assembly further comprises a rechargeable power supply.

5 17. (Original) The implantable fuel cell assembly as recited in claim 16, wherein
said fuel cell assembly further comprises a piezoelectric means for converting
electricity into mechanical motion.

18. (Original) The implantable fuel cell assembly as recited in claim 16, wherein
said fuel cell assembly further comprises electrostrictive means for converting
10 electricity into mechanical motion.



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10/035,985	12/31/2001	Xingwu Wang	XW-33	3623

27157 7590 08/27/2003

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YUAN, DAH WEI D

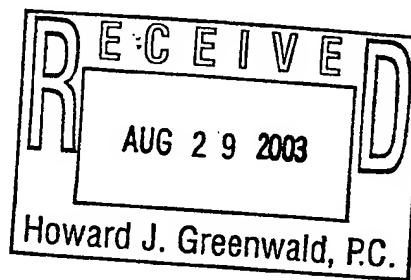
ART UNIT

PAPER NUMBER

1745

DATE MAILED: 08/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.



Office Action Summary

Application No.

10/035,985

Applicant(s)

WANG ET AL.

Examiner

Dah-Wei D. Yuan

Art Unit

1745

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

IMPLANTABLE FUEL CELL

Examiner: Yuan

S.N. 10/035,985

Art Unit: 1745

August 22, 2003

Claim Objections

1. Claim 14 is objected to because of the following informalities:

The meaning of the term "fro" in line 4 is unclear.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The term "microknife" has been used in conjunction with different medical fields. Ashraf (US 6,197,039 b1) describes the use of a microknife for hair transplant. Michelson (US 5,423,842) discloses the use of a microknife in spinal surgery. It is not clear as to the functionality and structure of the microknife recited in the instant specification. Applicant discloses that the microknife is used to harvest the fat cell beneath a person's skin before the cells can be converted to fatty acid and glycerol. It is therefore of imperative significance to

understand how the microknife is operated and functioned. It is the position of the examiner that the disclosure fails to teach people of ordinary skill in the art as how the body fat is harvested and collected from the human body before it is converted to reactant gas for the fuel cell.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yao et al. (US 4,294,891) teach an implantable miniature fuel cell that is intermittently refuelable through refueling ports. Keller (US 6,294,281) teaches a biological fuel cell comprising an anode enzyme and a cathode enzyme.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (703) 308-0766. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (703) 308-2383. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Dah-Wei D. Yuan
August 25, 2003



Notice of References Cited	Application/Control No. 10/035,985		Applicant(s)/Patent Under Reexamination WANG ET AL.	
	Examiner Dah-Wei D. Yuan		Art Unit 1745	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-4,294,891	10-1981	Yao et al.	429/2
	B	US-5,423,842	06-1995	Michelson, Gary K.	606/167
	C	US-6,197,039	03-2001	Ashraf, Bahman	606/172
	D	US-6,294,281	09-2001	Heller, Adam	429/43
	E	US-			
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FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

**CERTIFICATE OF
FACSIMILE
TRANSMISSION**

Amendment

Application Number	10/035,985
Filing Date	12/31/2001
First Inventor	Wang, Xingwu
Examiner Name	Dah-Wei D. Yuan
Art Unit	1745
Docket Number	XW-33 (393)

Faxed to Number 1-703-872-9310

Total Pages 12

DATE OF TRANSMISSION: 1/27/2004

TITLE OF CASE:

Implantable Fuel Cell

The following documents are enclosed:

Certificate of Facsimile Transmission (1 page)


Amendment (7 pages)

Petition for Extension of time (2 pages, duplicate copies)

Fee Transmittal Form (2 pages, duplicate copies)

The above named documents are being facsimile transmitted to the United States Patent and Trademark Office on the date indicated above. The Director is authorized to charge any additional fee(s) as needed during the pendency of this application to deposit account 50-2753.

Howard J. Greenwald P.C.
349 West Commercial Street, Suite 2490
East Rochester, NY 14445
(585) 387-0285

Signature of Transmitter: 

- ☐ Howard J. Greenwald, Esq (Reg. No. 24,247)
- ☐ John M. Hammond (Reg. No. 52,986)
- ☒ Peter J. Mikesell (Reg. No. 54,311)

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PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a) Docket Number (Optional) **XW-33 (393)**In re Application of **Wang, Xingwu**Application Number **10/035,985**Filed **12/31/2001**

For Implantable Fuel Cell

Art Unit **1745**Examiner **Dah-Wei D. Yuan**

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.

The requested extension and appropriate non-small-entity fee are as follows (check time period desired):

- ☐ One month (37 CFR 1.17(a)(1)) \$ 110
- ☒ Two months (37 CFR 1.17(a)(2)) \$ 420
- ☐ Three months (37 CFR 1.17(a)(3)) \$ 950
- ☐ Four months (37 CFR 1.17(a)(4)) \$ 1480
- ☐ Five months (37 CFR 1.17(a)(5)) \$ 2010

- ☒ Applicant claims small entity status. See 37 CFR 1.27. Therefore, the fee amount shown above is reduced by one-half, and the resulting fee is: \$ 210.
- ☐ A check in the amount of the fee is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☒ The Director has already been authorized to change fees in this application to a Deposit Account.
- ☒ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 50-2753.

I have enclosed a duplicate copy of this sheet.

I am the ☐ applicant/inventor.

- ☐ assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed (Form PTO/SB/96).
- ☐ attorney or agent of record.
- ☒ attorney or agent under 37 CFR 1.34(a).
Registration number if acting under 37 CFR 1.34(a) 54,311

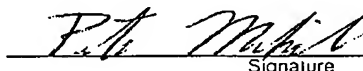
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1/27/2004

Date

(585) 387-0285

Telephone Number



Signature

Peter J. Mikesell, Reg. No. 54,311

Typed or printed name

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

- ☒ Total of 1 forms are submitted.

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PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)		Docket Number (Optional) XW-33 (393)
In re Application of Wang, Xingwu		
Application Number 10/035,985		Filed 12/31/2001
For Implantable Fuel Cell		
Art Unit 1745		Examiner Dah-Wei D. Yuan

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.

The requested extension and appropriate non-small-entity fee are as follows (check time period desired):

<input type="checkbox"/> One month (37 CFR 1.17(a)(1))	\$ <u>110</u>
<input checked="" type="checkbox"/> Two months (37 CFR 1.17(a)(2))	\$ <u>420</u>
<input type="checkbox"/> Three months (37 CFR 1.17(a)(3))	\$ <u>950</u>
<input type="checkbox"/> Four months (37 CFR 1.17(a)(4))	\$ <u>1480</u>
<input type="checkbox"/> Five months (37 CFR 1.17(a)(5))	\$ <u>2010</u>

☒ Applicant claims small entity status. See 37 CFR 1.27. Therefore, the fee amount shown above is reduced by one-half, and the resulting fee is: \$ 210.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☒ The Director has already been authorized to change fees in this application to a Deposit Account.

☒ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 50-2753.

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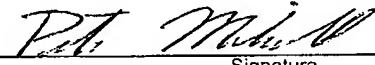
I am the ☐ applicant/inventor.

☐ assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed (Form PTO/SB/96).

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Registration number if acting under 37 CFR 1.34(a) 54,311

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<u>1/27/2004</u> Date	 Signature
<u>(585) 387-0285</u> Telephone Number	<u>Peter J. Mikesell, Reg. No. 54,311</u> Typed or printed name

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

☒ Total of 1 forms are submitted.

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FEE TRANSMITTAL
for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☒ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 210

Complete if Known

Application Number	10/035,985
Filing Date	12/31/2001
First Named Inventor	Wang, Xingwu
Examiner Name	Dah-Wei D. Yuan
Art Unit	1745
Attorney Docket No.	XW-33 (393)

METHOD OF PAYMENT (check all that apply)☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None☒ Deposit Account:Deposit Account Number
50-2753Deposit Account Name
Howard J. Greenwald P.C.

The Director is authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☒ Credit any overpayments☒ Charge any additional fee(s) or any underpayment of fee(s)☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.**FEE CALCULATION****1. BASIC FILING FEE**

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1001 770	2001 385	Utility filing fee	
1002 340	2002 170	Design filing fee	
1003 530	2003 265	Plant filing fee	
1004 770	2004 385	Reissue filing fee	
1005 160	2005 80	Provisional filing fee	

SUBTOTAL (1) (\$)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims	Extra Claims	Fee from below	Fee Paid
Independent	-20** =	X	
Multiple Dependent	-3** =	X	

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description
1202 18	2202 9	Claims in excess of 20
1201 86	2201 43	Independent claims in excess of 3
1203 290	2203 145	Multiple dependent claim, if not paid
1204 86	2204 43	** Reissue independent claims over original patent
1205 18	2205 9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$) 0

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)**3. ADDITIONAL FEES**

Large Entity Small Entity

Fee Code (\$)	Fee Code (\$)	Fee Description	Fee Paid
1051 130	2051 65	Surcharge - late filing fee or oath	
1052 50	2052 25	Surcharge - late provisional filing fee or cover sheet	
1053 130	2053 130	Non-English specification	
1812 2,520	2120 2,520	For filing a request for <i>ex parte</i> reexamination	
1804 920*	1804 920*	Requesting publication of SIR prior to Examiner action	
1805 1,840*	1805 1,840*	Requesting publication of SIR after Examiner action	
1251 110	2251 55	Extension for reply within first month	
1252 420	2252 210	Extension for reply within second month	
1253 950	2253 475	Extension for reply within third month	210
1254 1,480	2254 740	Extension for reply within fourth month	
1255 2,010	2255 1,005	Extension for reply within fifth month	
1401 330	2401 165	Notice of Appeal	
1402 330	2402 165	Filing a brief in support of an appeal	
1403 290	2403 145	Request for oral hearing	
1451 1,510	1451 1,510	Petition to institute a public use proceeding	
1452 110	2452 55	Petition to revive - unavoidable	
1453 1,330	2453 665	Petition to revive - unintentional	
1501 1,330	2501 665	Utility issue fee (or reissue)	
1502 480	2502 240	Design issue fee	
1503 640	2503 320	Plant issue fee	
1460 130	1460 130	Petitions to the Commissioner	
1807 50	1807 50	Processing fee under 37 CFR 1.17(q)	
1806 180	1806 180	Submission of Information Disclosure Stmt	
8021 40	8021 40	Recording each patent assignment per property (times number of properties)	
1809 770	2809 385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810 770	2810 385	For each additional invention to be examined (37 CFR 1.129(b))	
1801 770	2801 385	Request for Continued Examination (RCE)	
1802 900	1802 900	Request for expedited examination of a design application	

Other fee (specify)

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$) 210

SUBMITTED BY

Name (Print/Type)	Peter J. Mikesell	Registration No. (Attorney/Agent)	54,311	Telephone	585-337-0285
Signature	<i>P.J. Mikesell</i>	Date	01/27/2004		

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Complete if Known

Application Number 10/035,985
Filing Date 12/31/2001
First Named Inventor Wang, Xingwu
Examiner Name Dah-Wei D. Yuan
Art Unit 1745
Attorney Docket No. XW-33 (393)

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:

Deposit Account Number 50-2753

Deposit Account Name Howard J. Greenwald P.C.

The Director is authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☒ Credit any overpayments

☒ Charge any additional fee(s) or any underpayment of fee(s)

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FEE CALCULATION (continued)

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1453 1,330	2453 665	Petition to revive - unintentional	
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Other fee (specify)

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$ 210

SUBMITTED BY

Name (Print/Type) Peter J. Mikesell Registration No. 54,311 Telephone 585-387-0285
Signature [Signature] (Attorney/Agent) Date 01/27/2004

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Application No. 10/035,985
Date of Response 1/27/2004
Reply to Action of 8/27/2003

Application No.	10/035,985
Applicant	Wang, Xingwu et al.
Filed	12/31/2001
Title	Implantable Fuel Cell
TC/A.U.	1745
Examiner	Dah-Wei D. Yuan
Docket No.	XW-33 (393)

Honorable Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT

Sir:

In response to the Office Action of August 27, 2003, please amend the above-identified application as follows:

Listing of Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 5 of this paper.

LISTING OF CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) An implantable fuel cell assembly comprised of means for converting fat to glycerol and fatty acid, means for converting glycerol to hydrogen, means for converting fatty acid to hydrogen, means for converting a bodily fluid to a gas selected from the group consisting of hydrogen, oxygen, and mixtures thereof, and fuel cell means for producing electricity from hydrogen and oxygen.
2. (Original) The implantable fuel cell assembly as recited in claim 1, wherein said implantable fuel cell assembly is disposed beneath the skin of a human being.
3. (Original) The implantable fuel cell assembly as recited in claim 2, wherein said implantable fuel cell assembly is disposed near fat cells.
4. (Original) The implantable fuel cell assembly as recited in claim 1, wherein said implantable fuel cell assembly is comprised of means for harvesting fat cells.
5. (Original) The implantable fuel cell assembly as recited in claim 4, wherein said means for harvesting fat cells is comprised of a microknife.
6. (Original) The implantable fuel cell assembly as recited in claim 1, wherein said means for converting said fat to said glycerol and said fatty acids is comprised of a fat-permeable material.
7. (Original) The implantable fuel cell assembly as recited in claim 6, wherein said means for converting said fat to said glycerol and said fatty acids is comprised of lipase enzyme.

8. (Original) The implantable fuel cell assembly as recited in claim 7, wherein from about 3 to about 10 percent of said lipase enzyme is present, based upon the total mass of said lipase enzyme and said fat.
9. (Original) The implantable fuel cell assembly as recited in claim 8, further comprising a porous material with an average pore size of less than about 10 nanometers.
10. (Original) The implantable fuel cell assembly as recited in claim 1, wherein said means for converting said fatty acids to hydrogen is comprised of beta oxidase enzyme.
11. (Original) The implantable fuel cell assembly as recited in claim 10, wherein said means for converting said fatty acids to hydrogen is comprised of oxaloacetate.
- 12 (Original) The implantable fuel cell assembly as recited in claim 1, further comprising a glycerol fuel cell.
13. (Original) The implantable fuel cell assembly as recited in claim 12, wherein said glycerol fuel cell is comprised of an anode and anode enzyme disposed on said anode, wherein said anode is configured and arranged for electroxidizing an anode reductant in the presence of the anode enzyme.
14. (Currently Amended) The implantable fuel cell assembly as recited in claim 13, wherein said glycerol fuel cell is comprised of a cathode spaced apart from said anode and cathode enzyme disposed on said cathode, wherein said cathode is configured and arranged ~~for~~ for electroreducing a cathode oxidant in the presence of said cathode enzyme.
15. (Original) The implantable fuel cell assembly as recited in claim 1, wherein said gas is oxygen.

16. (Original) The implantable fuel cell assembly as recited in claim 1, wherein said fuel cell assembly further comprises a rechargeable power supply.

17. (Original) The implantable fuel cell assembly as recited in claim 16, wherein said fuel cell assembly further comprises a piezoelectric means for converting electricity into mechanical motion.

18. (Original) The implantable fuel cell assembly as recited in claim 16, wherein said fuel cell assembly further comprises electrostrictive means for converting electricity into mechanical motion.

REMARKS

This Amendment is being entered in response to the Office Action of August 27, 2003. In this Office Action, the Examiner made the following objections and rejections:

1. The Examiner has objected to claim 14 in formal grounds.
 2. The Examiner has rejected claims 1-18 as allegedly not enabling.
- Applicant respectfully requests reconsideration.

1. OBJECTION TO CLAIM 14 ON FORMAL GROUNDS

The Examiner has objected to claim 14 on formal grounds stating:

Claim 12 is objected to because of the following informalities: The meaning of the term "fro" in line 4 is unclear. Appropriate correction is required.

As per the Examiner's request, the applicants have amended claim 14 to replace the term "fro" with "for".

2. REJECTION OF CLAIMS 1-18 AS ALLEGEDLY NOT ENABLING

The Examiner has rejected claims 1-18 as allegedly not being enabling stating:

Claims 1-18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most clearly connected, to make and/or use the invention. The term "microknife" has been used in conjunction with different medical fields. Ashraf (US 6,197,039 B1) describes the use of a microknife for hair transplant. Michelson (US 5,423,842) discloses the use of a microknife in spinal surgery. It is not clear as to the functionality and structure of the microknife recited in the instant specification. Applicant discloses that the microknife is used to harvest the fat cell beneath a person's skin before the cells can be converted to fatty acid and glycerol. It is therefore of imperative significance to understand how the microknife is operated and functioned. It is the position of the examiner that the disclosure fails to teach people of ordinary skill in the art as how the body fat is harvested and collected from the human body before it is converted to reactant gas for the fuel cell.

The applicants respectfully suggest the rejection of claims 1-4 and 6-19 is improper, as these terms do not contain the claim element the Examiner has objected to. The applicants note that the Examiner has objected to the claim element of a "microknife". The applicants respectfully suggest that this element appears only in claim 5. Claim 5 has no dependent claims. The applicants respectfully suggest that a rejection of claims 1-4 and 6-18 is improper, as these claims do not contain the claim element which the Examiner is rejecting.

The Test of Enablement is outlined in the M.P.E.P § 2164.01:

The standard for determining whether the specification meets the enablement requirement was cast in the Supreme Court decision of *Mineral Separation v Hyde*, 242 U.S. 261, 270 (1916) which postured the question: is the experimentation needed to practice the invention undue or unreasonable? ..The test of enablement is whether one reasonable skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation. A patent need not teach, and preferably omits, what is well known in the art."

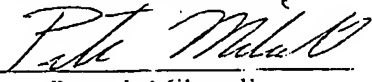
Furthermore, M.P.E.P. § 2164.05(a) recites:

The specification need not disclose what is well-known to those skilled in the art and preferably omits that which is well-known to those skilled and already available to the public....In general, if an applicant seeks to use a patent to prove the state of the art for the purpose of the enablement requirement, the patent must have an issue date earlier than the effective filing date of the application.

Applicants respectfully suggest that virtual cornucopia of surgical devices suitable for making precision cuts were easily available to one of ordinary skill in the art prior to the filing date of the applicants' application. By way of illustration, reference may be had to Carr et al. (United States Patent 5,980,518; issued on November 9, 1999), which discloses a "Microcautery Surgical Tool" that would be suitable for use in the instant invention. Furthermore, the "Brief Description of the Prior Art" references other precision cutting tools, dividing them into two classes ("microscalpels and laser scalpels). Additional examples of suitable microknives may be found by referencing Carr et al. (United States Patent 5,792,137; issued on August 11, 1998) which discloses a "Coagulating Microsystem". A wide variety of surgical cutting instruments may serve as a microknife, all of which are routinely available to one of ordinary skill in the art. Applicants respectfully suggest that modification of any of these microsurgical instruments for use in the instant invention would not require one of ordinary skill in the art to partake in undue experimentation. To lessen the Examiner's burden, and in compliance with the aforementioned sections of the M.P.E.P., examples of microscalpels were omitted from the specification, as these devices were well-known to those skilled in the art as of the filing date of the application.

Applicants respectfully request reconsideration and that a timely Notice of Allowance be issued in this case. If, for any reason, the Patent Examiner believes that a telephone conference with applicant's agent might in any way facilitate the prosecution of this case, the Examiner is respectfully requested to call such agent.

Respectfully submitted,
Howard J. Greenwald P.C.

By 
Peter J. Miksell
Reg. No. 54,311
Telephone (585) 387-0285
Fax (585) 387-0288

HP OfficeJet
Personal Printer/Fax/Copier

Fax Log Report for
Greenwald P.C.
585-387-0288
Jan-27-04 09:04 AM.

<u>Identification</u>	<u>Result</u>	<u>Pages</u>	<u>Type</u>	<u>Date</u>	<u>Time</u>	<u>Duration</u>	<u>Diagnostic</u>
17038729310	OK	12	Sent	Jan-27	08:57A	00:06:27	002586030022

Auto-Reply Facsimile Transmission



TO: Fax Sender at 585 387 0288

Fax Information
Date Received: 1/27/2004 8:58:37 AM [Eastern Standard Time]
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Cover
Page

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Jan-27-04 08:57A Greenwald P.C.

585-337-0288

P.01

CERTIFICATE OF FACSIMILE TRANSMISSION

Amendment

Application Number	10/035,985
Filing Date	12/31/2001
First Inventor	Wang, Xingwu
Examiner Name	Dan-Wei D. Yuan
Art Unit	1745
Docket Number	XW-33 (393)

Faxed to Number 1-703-672-9310

Total Pages 12

DATE OF TRANSMISSION: 1/27/2004

TITLE OF CASE:

Implantable Fuel Cell

The following documents are enclosed:

Certificate of Facsimile Transmission (1 page)

Amendment (7 pages)

Petition for Extension of time (2 pages, duplicate copies)

Fee Transmittal Form (2 pages, duplicate copies)

The above named documents are being facsimile transmitted to the United States Patent and Trademark Office on the date indicated above. The Director is authorized to charge any additional fees as needed during the pendency of this application to deposit account 30-2753.

Howard J. Greenwald P.C.
328 West Commercial Street, Suite 2-BH
East Rochester, NY 14445
(585) 387-0285

Signature of Transmitter:

PA Mikesell
Howard J. Greenwald, Esq. (Reg. No. 24,247)
John M. Hammond (Reg. No. 52,986)
✗ Peter J. Mikesell (Reg. No. 34,311)

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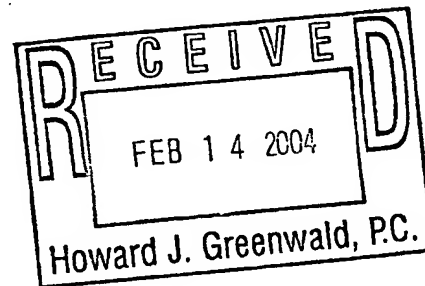
UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/035,985	12/31/2001	Xingwu Wang	XW-33	3623
37282	7590	02/12/2004	EXAMINER	
HOWARD J. GREENWALD P.C. 349 W. COMMERCIAL STREET SUITE 2490 EAST ROCHESTER, NY 14445-2408			YUAN, DAH WEI D	
			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 02/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.



AS

Office Action Summary	Application No. 10/035,985	Applicant(s) WANG ET AL.	
	Examiner Dah-Wei D. Yuan	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

IMPLANTABEL FUEL CELL

Examiner: Yuan

S.N. 10/035,985

Art Unit: 1745

February 6, 2004

Detailed Action

1. The Applicant's amendment filed on January 27, 2004 was received. Claim 14 was amended.
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on August 27, 2003.

Claim Objections

3. The claim objections under 35 U.S.C. 112, first second paragraph, on claim 14 are withdrawn, because claim 14 has been amended.

Claim Rejections - 35 USC § 112

4. The claim rejections under 35 U.S.C. 112, first second paragraph, on claims 1-18 are maintained.

Claims 1-18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The disclosure does not discuss clearly how the fat cells are harvested before they can be processed to glycerol and fatty acid. The term "harvesting" is interpreted to include not only cutting, but also collecting the cut cells and transporting the cells to the reaction sites for

converting fatty acid to hydrogen. The term "microknife" has been used in conjunction with different medical fields. Ashraf (US 6,197,039 b1) describes the use of a microknife for hair transplant. Michelson (US 5,423,842) discloses the use of a microknife in spinal surgery. It is not clear as to the functionality and structure of the microknife recited in the instant specification. Applicant discloses that the microknife is used to harvest the fat cell beneath a person's skin before the cells can be converted to fatty acid and glycerol. It is therefore of imperative significance to understand how the microknife is operated and functioned. It is the position of the examiner that the disclosure fails to teach people of ordinary skill in the art as how the body fat is harvested and collected from the human body before it is converted to reactant gas for the fuel cell.

Response to Arguments

5. Applicant's arguments filed on January 27, 2003 have been fully considered but they are not persuasive.

Applicant's principle arguments are

(a) Virtual cornucopia of surgical devices suitable for making precision cuts are easily available to one of ordinary skill in the art;

(b) Specifics of the microknife are exemplified in Carr et al. (US 5,792,137) and Carr et al. (US 5,980,518).

Art Unit: 1745

In response to Applicant's arguments, please consider the following comments.

(a) Surgical device may be readily comprehensible for one of ordinary skill in the medical device art, but not necessarily for the artisan in the fuel cell art;

(b) both Carr reference teach a device for simultaneously performing precision cutting and cauterizing of targeted tissues. However, the instant disclosure requires additional functionality and undertaking, other than cutting and cauterizing, from the converting means to enable one skilled in the art to make and/or use the invention. Specifically, it is unclear to the examiner how the fat cells are to be collected, transported and handled before the reaction with the enzyme can take place. The instant specification also fails to disclose how the gaseous species, including hydrogen and oxygen, would be contained for a conventional fuel cell reaction.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 1745

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (571) 272-1295. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dah-Wei D. Yuan
February 6, 2004


CAROL CHANEY
PRIMARY EXAMINER

**CERTIFICATE OF
MAILING**

Notice of Appeal

Application Number	10/035,985
Filing Date	12/31/2001
First Inventor	Wang, Xingwu
Examiner Name	Dah-Wei D. Yuan
Art Unit	1745
Docket Number	XW-33 (393)

DATE OF DEPOSIT: 2/18/2004

TITLE OF CASE:

Implantable Fuel Cell

The following documents are enclosed:

Certificate of Mailing (1 page)

Notice of Appeal (1 page)

Fee Transmittal Form (1 page)

Check 10353 for \$165 (1 page)

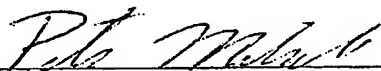
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The Director is authorized to charge any additional fee(s) as needed during the pendency of this application to deposit account 50-2753.

Howard J. Greenwald P.C.
349 West Commercial Street, Suite 2490
East Rochester, NY 14445
(585) 387-0285

Signature of Mailer:



Howard J. Greenwald, Esq (Reg. No. 24,247)
John M. Hammond (Reg. No. 52,986)
• Peter J. Mikesell (Reg. No. 54,311)

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FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☒ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 165

Complete if Known

Application Number 10/035,985
Filing Date 12/31/2001
First Named Inventor Wang, Xingwu
Examiner Name Dah-Wei D. Yuan
Art Unit 1745
Attorney Docket No. XW-33 (393)

METHOD OF PAYMENT (check all that apply)

☒ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:

Deposit Account Number 50-2753
Deposit Account Name Howard J. Greenwald P.C.

The Director is authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☒ Credit any overpayment(s)

☒ Charge any additional fee(s) or any underpayment of fee(s)

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FEE CALCULATION

1. BASIC FILING FEE

Large Entity	Small Entity	Fee Code	Fee (\$)	Fee Description	Fee Paid
		Code (\$)	Code (\$)		
1001	2001	770	385	Utility filing fee	
1002	2002	340	170	Design filing fee	
1003	2003	530	265	Plant filing fee	
1004	2004	770	385	Reissue filing fee	
1005	2005	160	80	Provisional filing fee	

SUBTOTAL (1) (\$)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims	Extra Claims	Fee from below	Fee Paid
Independent Claims	-20** =	X	=
Multiple Dependent	-3** =	X	=

Large Entity	Small Entity	Fee Code	Fee (\$)	Fee Description	Fee Paid
		Code (\$)	Code (\$)		
1202	2202	18	9	Claims in excess of 20	
1201	2201	86	43	Independent claims in excess of 3	
1203	2203	290	145	Multiple dependent claim, if not paid	
1204	2204	86	43	** Reissue independent claims over original patent	
1205	2205	18	9	** Reissue claims in excess of 20 and over original patent	

SUBTOTAL (2) (\$) 0

**or number previously paid, if greater: For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity	Small Entity	Fee Code	Fee (\$)	Fee Description	Fee Paid
		Code (\$)	Code (\$)		
1051	2051	130	65	Surcharge - late filing fee or oath	
1052	2052	50	25	Surcharge - late provisional filing fee or cover sheet	
1053	1053	130	130	Non-English specification	
1812	1812	2,520	2,520	For filing a request for <i>ex parte</i> reexamination	
1804	1804	920*	920*	Requesting publication of SIR prior to Examiner action	
1805	1805	1,840*	1,840*	Requesting publication of SIR after Examiner action	
1251	2251	110	55	Extension for reply within first month	
1252	2252	420	210	Extension for reply within second month	
1253	2253	950	475	Extension for reply within third month	
1254	2254	1,480	740	Extension for reply within fourth month	
1255	2255	2,010	1,005	Extension for reply within fifth month	
1401	2401	330	165	Notice of Appeal	165
1402	2402	330	165	Filing a brief in support of an appeal	
1403	2403	290	145	Request for oral hearing	
1451	1451	1,510	1,510	Petition to institute a public use proceeding	
1452	2452	110	55	Petition to revive - unavoidable	
1453	2453	1,330	665	Petition to revive - unintentional	
1501	2501	1,330	665	Utility issue fee (or reissue)	
1502	2502	480	240	Design issue fee	
1503	2503	640	320	Plant issue fee	
1460	1460	130	130	Petitions to the Commissioner	
1807	1807	50	50	Processing fee under 37 CFR 1.17(q)	
1806	1806	180	180	Submission of Information Disclosure Stmt	
8021	8021	40	40	Recording each patent assignment per property (times number of properties)	
1809	2809	770	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	2810	770	385	For each additional invention to be examined (37 CFR 1.129(b))	
1801	2801	770	385	Request for Continued Examination (RCE)	
1802	1802	900	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$) 165

SUBMITTED BY

Name (Print/Type) Peter J. Mikesell Registration No. 54,311 Telephone (585) 387-0285
Signature [Signature] Date 02/18/2004

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This collection of information is required by 37 CFR 1.17 and 1.27. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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**NOTICE OF APPEAL FROM THE EXAMINER TO
THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Docket Number (Optional)

XW-33 (393)

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Signature

Typed or printed
name

Peter J. Mikesell

In re Application of
Wang, XingwuApplication Number
10/035,985

Filed

12/31/2001

For Implantable Fuel Cell

Art Unit

1745

Examiner

Dah-Wei D. Yuan

Applicant hereby appeals to the Board of Patent Appeals and Interferences from the last decision of the examiner.

The fee for this Notice of Appeal is (37 CFR 1.17(b))

\$ 330

☒ Applicant claims small entity status. See 37 CFR 1.27. Therefore, the fee shown above is reduced by half, and the resulting fee is:

\$ 165

☒ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account. I have enclosed a duplicate copy of this sheet.

☒ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 50-2753. I have enclosed a duplicate copy of this sheet.

☒ A petition for an extension of time under 37 CFR 1.36(a) (PTO/SB/22) is enclosed.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant/inventor.

☐ assignee of record of the entire interest.
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.
(Form PTO/SB/96)

☐ attorney or agent of record.

☒ attorney or agent acting under 37 CFR 1.34(a).
Registration number if acting under 37 CFR 1.34(a) 54,311


Signature

Peter J. Mikesell

Typed or printed name

(585) 387-0285

Telephone number

2/18/2004

Date

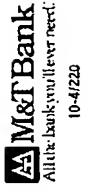
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☒ *Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.191. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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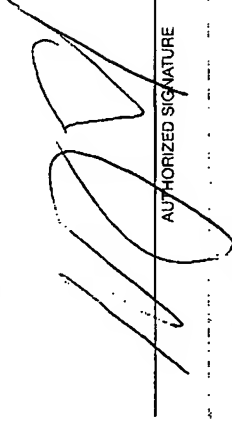
HOWARD JAY GREENWALD, P.C.
349 W. COMMERCIAL ST. SUITE 2450
EAST ROCHESTER, NY 14445

2/17/2004

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ORDER OF Commissioner of Patents and Trademarks

\$ **165.00

One Hundred Sixty-Five and 00/100***** DOLLARS


AUTHORIZED SIGNATURE

MEMO:

⑈010353⑈ ⑆022000046⑆ 8890232039⑈

HOWARD JAY GREENWALD, P.C.

Commissioner of Patents and Trademarks

Docket 393 Biophan

10353

2/17/2004

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Docket: XW-393

Serial No: 10/035,985

Date Mailed: 2/18/2004

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Certificate of Mailing (1 page)

Notice of Appeal (1 page)

Fee Transmittal Form (1 page)

Check 10353 for \$165

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CERTIFICATE OF
FACSIMILE
TRANSMISSION

Amendment

Application Number	10/035,985
Filing Date	12/31/2001
First Inventor	Wang, Xingwu
Examiner Name	Dah-Wei D. Yuan
Art Unit	1745
Docket Number	XW-33 (393)

Faxed to Number 1-703-872-9311

Total Pages 6

DATE OF TRANSMISSION: 5/6/2004

TITLE OF CASE:

Implantable Fuel Cell

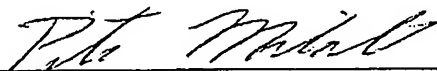
The following documents are enclosed:

Certificate of Facsimile Transmission (1 page)

Amendment (5 pages)

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Howard J. Greenwald P.C.
349 W. Commercial Street, Suite 2490
East Rochester, NY 14445
Telephone (585) 387-0285
Fax (585) 387-0288

Signature of Transmitter: 

___ Howard J. Greenwald, Reg. No. 24,247
___ John M. Hammond, Reg. No. 52,986
☒ Peter J. Mikesell, Reg. No. 54,311

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Application No.: 10/035,985
Date of Response: 05/06/2004
Concerning the Office Action of: 02/12/2004

Application No.	10/035,985
Applicant	Wang, Xingwu
Filed	12/31/2001
Title	Implantable Fuel Cell
TC/A.U.	1745
Examiner	Dah-Wei D. Yuan
Docket No.	XW-33 (393)

Honorable Commissioner for Patents
P.O. Box 1450
5 Alexandria, VA 22313-1450

RESPONSE

Sir:

In reply to the Office Action of February 12, 2004, please find the
10 response as follows:

Listing of Claims are reflected in the listing of claims which begins on
page 2 of this paper.

Remarks/Arguments begin on page 5 of this paper.

LISTING OF CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) An implantable fuel cell assembly comprised of means for converting
5 fat to glycerol and fatty acid, means for converting glycerol to hydrogen, means
for converting fatty acid to hydrogen, means for converting a bodily fluid to a
gas selected from the group consisting of hydrogen, oxygen, and mixtures
thereof, and fuel cell means for producing electricity from hydrogen and
oxygen.
- 10 2. (Original) The implantable fuel cell assembly as recited in claim 1, wherein
said implantable fuel cell assembly is disposed beneath the skin of a human
being.
3. (Original) The implantable fuel cell assembly as recited in claim 2, wherein
said implantable fuel cell assembly is disposed near fat cells.
- 15 4. (Canceled) ~~The implantable fuel cell assembly as recited in claim 1, wherein
said implantable fuel cell assembly is comprised of means for harvesting fat
cells.~~
5. (Canceled) ~~The implantable fuel cell assembly as recited in claim 4, wherein
said means for harvesting fat cells is comprised of a microknife.~~
- 20 6. (Original) The implantable fuel cell assembly as recited in claim 1, wherein
said means for converting said fat to said glycerol and said fatty acids is
comprised of a fat-permeable material.

7. (Original) The implantable fuel cell assembly as recited in claim 6, wherein
said means for converting said fat to said glycerol and said fatty acids is
comprised of lipase enzyme.

8. (Original) The implantable fuel cell assembly as recited in claim 7, wherein
5 from about 3 to about 10 percent of said lipase enzyme is present, based upon
the total mass of said lipase enzyme and said fat.

9. (Original) The implantable fuel cell assembly as recited in claim 8, further
comprising a porous material with an average pore size of less than about 10
nanometers.

10 10. (Original) The implantable fuel cell assembly as recited in claim 1, wherein
said means for converting said fatty acids to hydrogen is comprised of beta
oxidase enzyme.

11. (Original) The implantable fuel cell assembly as recited in claim 10, wherein
said means for converting said fatty acids to hydrogen is comprised of
15 oxaloacetate.

12 (Original) The implantable fuel cell assembly as recited in claim 1, further
comprising a glycerol fuel cell.

13. (Original) The implantable fuel cell assembly as recited in claim 12, wherein
said glycerol fuel cell is comprised of an anode and anode enzyme disposed on
20 said anode, wherein said anode is configured and arranged for electroxidizing
an anode reductant in the presence of the anode enzyme.

14. (Amended) The implantable fuel cell assembly as recited in claim 13, wherein
said glycerol fuel cell is comprised of a cathode spaced apart from said anode

and cathode enzyme disposed on said cathode, wherein said cathode is configured and arranged for electroreducing a cathode oxidant in the presence of said cathode enzyme.

15. (Original) The implantable fuel cell assembly as recited in claim 1, wherein
5 said gas is oxygen.

16. (Original) The implantable fuel cell assembly as recited in claim 1, wherein said fuel cell assembly further comprises a rechargeable power supply.

17. (Original) The implantable fuel cell assembly as recited in claim 16, wherein said fuel cell assembly further comprises a piezoelectric means for converting
10 electricity into mechanical motion.

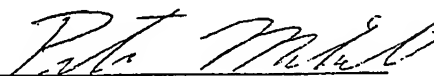
18. (Original) The implantable fuel cell assembly as recited in claim 16, wherein said fuel cell assembly further comprises electrostrictive means for converting electricity into mechanical motion.

REMARKS

This Amendment is being entered in response to the Notification of Non-Compliance with 37 CFR 1.192(c) that was mailed on May 3, 2004. On February 12, 2004 a Final Office Action was mailed to the applicants. In response to this
5 Office Action, the applicants filed a Notice of Appeal and Appeal Brief. On May 3, 2004, a Notification of Non-Compliance with 37 CFR 1.192(c) was mailed to the applicants that required that the status of claims 4 and 5 be addressed before the appeal process can proceed. To facilitate the appeal process, applicants have canceled claims 4 and 5. This cancellation removes issues from appeal.
10 Applicants respectfully request entry of this amendment.

If, for any reason, the Patent Examiner believes that a telephone conference with applicants' agent might in any way facilitate the prosecution of this case, the Examiner is respectfully requested to call such agent.

Respectfully submitted,
Howard J. Greenwald P.C.

By 

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CERTIFICATE OF FACSIMILE TRANSMISSION Amendment	Application Number	10/035,985
	Filing Date	12/31/2001
	First Inventor	Wang, Xingwu
	Examiner Name	Dah-Yvet D. Yuan
	Art Unit	1745
	Docket Number	XW-33 (393)

Faxed to Number: 1-703-872-9311 Total Pages: 6

DATE OF TRANSMISSION: 5/6/2004

TITLE OF CASE:
Implantable Fuel Cell

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Signature of Transmitter: P.J. Mahoney

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